Staff 1-1

Request:

Please provide the company's current emergency management plan in an electronic .pdf format.

Response:

Please see **Exhibit 1-1** for a copy of National Grid's New England Electric Emergency Procedures ("EEPs").

National Grid has established the New England EEPs for the purpose of managing outages caused by storms and other natural disasters, civil unrest, major equipment failure, or other emergency events. The New England EEPs include procedures that are adhered to throughout National Grid's Massachusetts, New Hampshire, and Rhode Island service territories whenever widespread disruptions impact the distribution system.

The New England EEPs provide the framework for the orderly response of system resources when these events arise. These procedures provide instruction on action taken during major emergencies for: (1) the restoration of electric service; (2) the notification of applicable government agencies and the public of emergency restoration progress; and (3) the response to official requests for specific emergency events or actions.

The New England EEPs are intended to be simple, flexible, and easily adapted to specific emergency events. Whenever possible, the procedures parallel normal operating procedures, to avoid confusion. This also reduces the need for specialized training or work practices.

.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-2

Request:

How often does your company update its emergency management plans?

Response:

The Company's EEPs are updated annually or after they have been used during a large-scale storm event (e.g., Winter Storm 2008), following a storm critique and the implementation of subsequent corrective actions (if any). The most recent update of the New England EEPs was conducted in October 2008.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-3

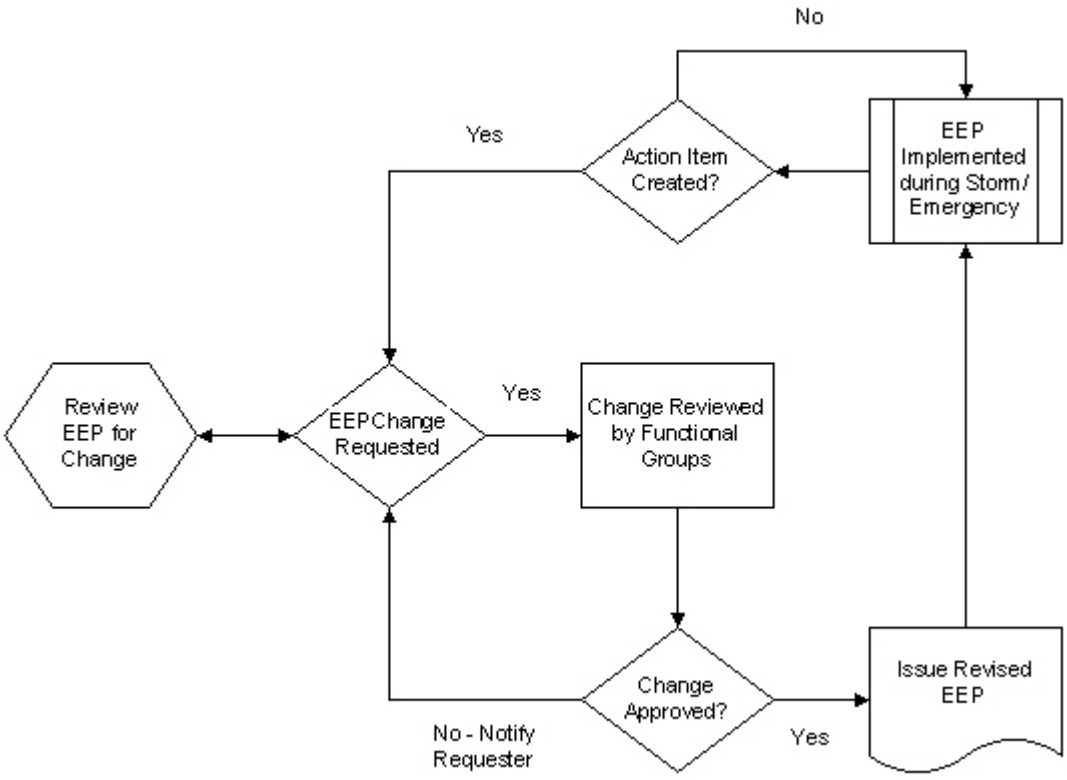
Request:

Please provide the process that is used to update your emergency management plan.

Response:

While anyone can propose a change to the EEPs (see **Exhibit 1-3** for the Change Request Form), the process detailed in Figure 1-3 is used for annual or "as needed" updates. An as needed update usually occurs following a storm critique or similar document that reveals improvement opportunities for the EEPs that do not coincide with the annual review frequency.

Figure 1-3



Prepared by or under the supervision of: Thomas Murphy

Staff 1-4

Request:

Who participates in the development of your emergency management plan? Please include details on the approval process.

Response:

The EEPs were developed with input from the following functional groups, which also have responsibilities for various sections of these procedures:

- Construction Delivery – Contractor Management
- Construction Delivery – Forestry
- Customer Contact Center
- Customer Operations
- Distribution Engineering Services
- Dispatch & Control
- Electric Distribution Operations & Generation (New England)
- Emergency Planning
- Energy Solutions Services
- Environmental Affairs
- Fleet Services
- Internal Communications
- Media Relations
- Regulatory Affairs
- Safety & Health Services
- Supply Chain Management
- Technical Learning
- Transmission Line Services
- Transmission Network Operations

Please see the response to Staff 1-3 regarding the process for making changes to the EEPs.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-5

Request:

Does your company subscribe to any professional weather forecasting services?

a. If yes, please provide the name or names of the company or companies.
b. Please also provide how long your company has subscribed to the service.
c. Please provide a description of the services provided to your company.

Response:

Yes. National Grid subscribes to a professional weather forecasting service.

a. The Company has retained Weather Services, Inc. ("WSI") of North Andover, Massachusetts for its weather forecasting services.

b. While the Company has used professional weather forecasting services for a number of years, the service subscription with WSI began in July 2004.

c. Please see **Exhibit 1-5** which details the contract services provided by WSI to National Grid.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-6

Request:

If your company does not subscribe to any professional weather forecasting services, please provide a detailed explanation why it does not.

Response:

As detailed in the response to Staff 1-5, National Grid subscribes to a professional weather forecasting service.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-7

Request:

Please provide all weather data and forecasts your company received and/or used on each of the following dates: December 9, 10, 11, and 12.

Response:

Exhibit 1-7 details the weather forecasts and alerts issued by WSI to National Grid between December 9 and 12, 2008. In addition, a radar image of the northeast and Mid-Atlantic States on December 11, 2008 at 6:00 p.m. and the ice accretion probability forecast are included in Exhibit 1-7.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-8

Request:

Please describe the process used to alert personnel within your company about the possibility of the December 2008 ice storm.

Response:

Table 1-8 below summarizes the steps taken to alert the Company of the potential ice event's impact:

Table 1-8

Date	Time	Action
Dec 10	8:51 a.m.	Emergency Planning notified Electric Distribution Operations et al. of a potential ice event on Dec 11-12
Dec 10	12:39 a.m.	Emergency Planning scheduled the ice event's first System-wide storm conference call for Dec 10 at 3:00 p.m. (System means operations in MA, NH, NY, and RI)
Dec 10	2:30 p.m.	Emergency Planning updated New Hampshire Office of Emergency Management ("OEM") and NH utilities on National Grid's storm plans
Dec 10	3:00 p.m.	First System-wide storm conference call held
Dec 10	3:11 p.m.	Bangor Hydro scheduled first Northeast Mutual Assistance Group ("NEMAG") conference call for Dec 11 at 8:30 a.m.
Dec 10	3:42 p.m.	Emergency Planning (National Grid) scheduled second System-wide storm conference call for Dec 11 at 1:30 p.m.
Dec 11	8:30 a.m.	First NEMAG conference call held
Dec 11	10:06 a.m.	Base Logistics, staging site supply vendor, confirmed that they are available to support National Grid
Dec 11	11:40 a.m.	Emergency Planning issued staffing report for Divisions in MA, NH, NY, and RI (except Long Island)
Dec 11	11:52 a.m.	Emergency Planning contacted Field Assistant Strike Team members for mobilization assignments in MA and NH
Dec 11	1:30 p.m.	Second storm conference call held System-wide, contractor resources pre-positioned in MA and NH, while internal resources pre-positioned in NY
Dec 11	2:21 p.m.	National Grid scheduled second NEMAG conference call for Dec 12 at 06:00 AM with members from the New York Mutual Assistance Group and Mid-Atlantic Mutual Aid Groups included
Dec 11	3:25 p.m.	Construction Delivery issued contractor staffing update for Dec 12

Date	Time	Action
Dec 11	10:24 p.m.	Emergency Planning scheduled third storm conference call for Dec 12 at 8:30 a.m.
Dec 11	10:31 p.m.	Emergency Planning updated NH OEM and NH utilities on National Grid storm plans to date
Dec 12	12:00 midnight	Division Storm Room opened for New England - North
Dec 12	2:00 a.m.	New England Regional and System Emergency Operations Center opened – Northborough, MA

Prepared by or under the supervision of: Thomas Murphy

Staff 1-9

Request:

Please describe in detail the process used to determine the resource needs of your company for a major restoration event.

Response:

National Grid has a defined set of procedures that provide a comprehensive approach to preparation and restoration. National Grid has a contracted weather service that provides updates three times daily and is constantly monitored. This information is provided to a wide audience within the organization; however, it is Emergency Planning's role to elevate conditions that could be problematic to our customers or the system. Once the forecast identifies an adverse condition the procedures are implemented.

Exhibit 1-9(a) details the checklist items that the Region Emergency Operations Centers prompt the Division Storm Rooms to complete where and when applicable. Frequent storm conference calls are scheduled to align the Company and begin the storm preparation process. **Exhibit 1-9(b)** describes the topics covered during a typical call, which includes resource requests by the Divisions and Resource procurement by Construction Delivery.

One of those topics discussed on the storm conference calls is the assessment of internal resources against the forecasted impact area to determine to what extent available resources may be re-allocated. Once this assessment is completed and the internal resources have been exhausted, additional resources are considered. These resources come from two sources: (1) contractors and (2) foreign utility mutual assistance.

Within the New England Emergency Operations Center, Construction Delivery is responsible for procuring resources external to the Company. Typically, contractors are the first option because of early commitment ability before the storm event's impact. In contrast, mutual assistance is often rendered after the passage of the storm because of the foreign utility's obligation to its own customers and service territory. The response to Staff 1-20 details National Grid's specific activities regarding the acquisition of external resources for the December 2008 ice storm.

Prepared by or under the supervision of: Richard Francazio

Staff 1-10

Request:

Please describe the activation process of command centers, work centers, and staging sites. Please indicate the timeframe of the activation in relation to anticipated impact of the December 2008 storm.

Response:

Activation of the Division Storm Rooms and New England Emergency Operations Center can occur within three tiers and at five levels of Operating Conditions.

The three tiers of storm activation include: (1) Division Storm Room; (2) Regional Emergency Operations Center (New England – Northborough, Massachusetts); and (3) the System Emergency Operations Center (Northborough, Massachusetts).

For localized events that are managed within the Division by local resources and assigned contractor crews, Divisional Storm Room(s) is opened. The Storm Director for the event is the EDO Division VP or their representative. The Storm Management Team at this tier works closely with support services (e.g., Dispatch & Control, Transmission Network Operations, Transmission Line Services, Customer Contact Center – New England, and Media Relations) to effect the restoration process.

For events that impact multiple Divisions within a region, the respective Regional Emergency Operations Center is activated, in addition to the Divisional Storm Rooms. The region will coordinate cross-Division activities (e.g., Logistics, Resource Acquisition, and Communications Reporting) to permit the Divisions to focus more on the operations of restoring electric supply.

During the December 2008 storm, the Division Storm Room in North Andover opened at 12:00 midnight on December 12. Given the ongoing damage and rising customer interruptions, the decision to decentralize New Hampshire was made early on December 12 and the Salem Service Center began to dispatch orders. No staging sites were established in New Hampshire as part of the restoration effort; crews worked from either a Company facility or substation.

For events that impact multiple regions like the December 2008 ice storm, the System Emergency Operations Center will be activated and coordinate the restoration strategy System-wide. Additionally, the respective Region Emergency Operations Centers and Division Storm Rooms remain open to coordinate activities at their tiers.

During the December 2008 storm, the New England Emergency Operations Centers was staffed to open at 4:00 am on December 12.

The differing levels of Operating Conditions are used for both proactive and reactive planning. For reference, the Company classified the December 2008 ice storm as a Level 5 event. Table 1-10 on the following page details the five levels and their associated criteria/response actions. The five levels are defined as such:

Level 1 **Normal Operations** - System activity is normal with response coordinated with local on- call personnel.

Level 2 **Heightened Alert** - The severity within a Division is such that complete restoration is accomplished with possible assistance from other Divisions with complete restoration within a four 4 to 16 hour period. This requires assistance from Alliance contractors.

Level 3 **Enhanced Support** - The severity within a Division(s) is such that complete restoration is accomplished with assistance from other Divisions with complete restoration within a 16 to 48 hour period - 1.5 to 2 days. This requires assistance from other Divisions.

Level 4 **Comprehensive Support** - The severity within a Division(s) is such that complete restoration is accomplished with assistance from other Divisions with complete restoration within a 48 to 120 hour period - 2 to 5 days. This requires mutual assistance from other utilities and/or contractors.

Level 5 **Emergency Support** - The severity within a Division(s) is such that complete restoration is accomplished with assistance from other Divisions with complete restoration within a 120 + hour period - more than 5 days. This requires mutual assistance from other utilities and contractors, as well as other support personnel as dictated by the restoration effort.

Table 1-10

National Grid Operating Conditions and Levels				
Level	**Operating Condition**	**Current/Expected Situation Considerations (one or more)**		**Response Actions**
		Regional Level	**Division Level**	
1	Normal Operations	➢ Normal state	➢ Normal state	➢ System activity is normal ➢ Current support level is adequate ➢ Response with local On- call personnel ➢ No additional actions needed

National Grid Operating Conditions and Levels				
Level	**Operating Condition**	**Current/Expected Situation Considerations (one or more)**		**Response Actions**
		Regional Level	**Division Level**	
2	Heightened Alert	➢ 10,000 - 30,000 customer interruptions ➢ 4 - 16 hour ERT for full system service restoration ➢ Director may initiate in response to a potential threat to the system ➢ Consider current/future weather conditions ➢ Consider number of areas affected	➢ Normal, daily internal crew assignments at Division ➢ Possible inter-Divisional crew transfer limited to 15 crews, if localized event ➢ Contractor crews (overhead line and tree) limited to normal daily complement, as needed ➢ Storm and municipal rooms opened for limited time period	➢ Request additional support for divisional storm room staffing ➢ Request personnel and crews to be held at local platforms ➢ Contract crews to be held, as needed ➢ Up to 25% of SEAL personnel utilized ➢ Northboro and/or Syracuse EOCs may open ➢ Storm conference calls may be held ➢ Regulatory status updates provided, as needed ➢ Limited decentralization of one or more Divisions may occur
3	Enhanced Support	30,000 - 75,000 customer interruptions ➢ 16 - 48 hour ERT for full system service restoration	➢ All available internal crews assigned at Division ➢ Anticipated use of upwards of 60 contractor overhead line and 60 tree crews in Division ➢ SEAL personnel needed for wires down (standby), lodging, and municipal rooms ➢ Storm and municipal rooms opened for continuous operation throughout the restoration ➢ Assembly sites and/or material laydown areas may be established and maintained by Division and associated support services	➢ All available Operations personnel are utilized ➢ Up to 50% of SEAL personnel are utilized ➢ Additional Contract crews are requested and utilized ➢ Northboro and/or Syracuse EOC opened ➢ Storm conference calls will be held throughout the restoration ➢ No Normal routine operations in effected Divisions ➢ Regulatory reporting provided throughout the restoration ➢ Full decentralization of one or more Divisions per region

National Grid Operating Conditions and Levels				
Level	**Operating Condition**	**Current/Expected Situation Considerations (one or more)**		**Response Actions**
		Regional Level	**Division Level**	
4	Comprehensive Support	➢ 75,000 - 150,000 customer interruptions ➢ 48 - 120 hour ERT for full system service restoration	➢ All available internal crews assigned at Division ➢ Anticipated use of upwards of 100- 500 contractor or foreign utility overhead line and 100 - 500 tree crews in Division ➢ SEAL personnel needed for wires down (standby), wires down (appraiser), field guides, lodging, and municipal rooms ➢ Storm and municipal rooms opened for continuous operation throughout the restoration ➢ Division staging site may be established and maintained by Northboro and/or Syracuse EOCs and associated support services	➢ All available Operations personnel and contractors are utilized ➢ Up to 100% of SEAL personnel utilized ➢ Foreign utility crews are requested and utilized ➢ Northboro and Syracuse EOCs opened ➢ Storm conference calls will be held throughout the restoration ➢ Regulatory reporting provided throughout the restoration ➢ EOC and regulatory liaisons may be assigned ➢ Modified Staging Sites utilized (materials, fuel, & bussing) ➢ Full decentralization of one region
5	**Emergency Support**	➢ **150,000 + customer interruptions** ➢ **120+ hour ERT for full system service restoration**	➢ **All internal crews assigned at Division (vacations cancelled)** ➢ **Anticipated use of upwards of 500+ contractor or foreign utility overhead line and 500+ tree crews in Division** ➢ **All SEAL personnel needed for wires down (standby), wires down (appraiser), and field guides** ➢ **Storm and municipal rooms opened for continuous operation throughout the restoration** ➢ **Division staging site established and maintained by Northboro and Syracuse EOCs and associated support services**	➢ **All available Operations (vacations cancelled) personnel contractors are utilized** ➢ **100% of SEAL personnel are utilized, in addition to requests for more resources** ➢ **Foreign utility crews are requested and utilized** ➢ **Northboro and Syracuse EOCs opened** ➢ **Storm conference calls will be held throughout the restoration** ➢ **Staging Sites Open - Tents and Trailers** ➢ **Regulatory reporting provided throughout the restoration** ➢ **EOC and regulatory liaisons are assigned** ➢ **Full decentralization of one or more regions**

Prepared by or under the supervision of: Richard Francazio

Staff 1-11

Request:

Please describe the training in-house employees receive concerning outages and restoration.

Response:

The Company uses the Storm/Emergency Assignment Listing ("SEAL") to manage emergency/storm assignments and emergency/storm training information. This application assists in notifying and tracking employees serving as support personnel for the Division during emergencies. The SEAL Program also contains information such as training received, storm assignment, and default locations for employees who have received emergency storm assignments.

National Grid realizes that the daily normal assignments of some employees may be of more importance to normal operations than a temporary emergency/storm assignment. Also, other employees may be required to remain in their function to support the storm emergency. As a result, the Company has established four levels of SEAL availability.

- **Level 1:** The daily normal assignments of these employees may be postponed temporarily, making them available for a SEAL assignment. These people will be called upon first, as the need dictates.

- **Level 2:** If delayed for short time-periods, the daily normal assignments of these employees may adversely impact the overall Company performance or other critical functions within the System. These employees would only be called upon to assist in a SEAL assignment should the magnitude of the emergency/storm event demand resources beyond that available through Level 1.

- **Level 3:** The daily normal assignments of these employees are critical to the overall function of the System. Postponement of these assignments, even for a short time-period, may negatively impact the System. A number of these employees may also be required to remain in their function anyway to support storm emergency work in their respective locations (e.g., a line supervisor). Typically, these employees do not require SEAL training because their storm assignment is the same as their daily normal assignments.

- **Level 4:** These employees have medical conditions or family care issues that prevent them from performing a SEAL assignment.

Each Division SEAL/Retiree Coordinator schedules a mandatory annual training, to familiarize employees with their emergency/storm assignments. Employees with emergency/storm

assignments will be instructed to report to their default location. Additional sessions may be required for those employees not in attendance. If additional training is required to perform storm duties, Technical Learning in Millbury, Massachusetts shall be contacted.

The following courses are administered by Technical Learning for SEAL positions within the Division:

Storm Assignment Preparation

This training will prepare employees for the storm assignments of:

- Wire Down Appraiser
- Wire Down Stand-by
- Field Guide

In doing so, it will identify how to:

- Understand the responsibilities of the given job assignment
- Work in compliance with the National Grid prescribed safety rules
- Understand the fundamentals of the electric distribution system
- Identify hazards in the field
- Assess damage in the field
- Receive and respond to wire down calls
- Stand-by and secure damage sites
- Act as a field guide for foreign crews

Emergency Service Restoration

The purpose of this course is to prepare and qualify employees to assist in Emergency Service Restoration during emergency situations.

Train employees in the expectations and responsibilities associated with Emergency Service Restoration.

- Identify distribution equipment
- Test down wires for voltage
- Repair or cut and clear down services

Demonstrate ability to safely perform required tasks associated with Emergency Service Restoration.

Prepare employees to perform one of the following tasks as well:

- Wires down appraiser
- Field guide

- Stand-by personnel

The following courses are administered by Process & Systems in Westborough, Massachusetts for SEAL positions within either the Division or region:

Storm Damage Survey & Assessment – New England – North was contacted and asked to provide a list of all users that had a SEAL position to perform storm damage assessment and/or back-office support. Once the list of users was received, a Division training session was held with the users (May and June 2008). Working with Emergency Planning and Process & Systems, users were provided with an understanding of the Business Process as well System Training. These training sessions were held with the resources responsible for performing the damage survey as well as back-office data entry into the SDSA database.

Resources on Demand ("RoD") - RoD training is provided to all users as identified in the SEAL database. Coordinating this effort with Emergency Planning and Process & Systems, all SEAL-identified users, responsible for either inputting crew assignments or lodging crews, were trained in the detailed use of RoD for their job role (June and July 2008). Additional (more detailed) training was provided to a more limited group referred to as the RoD Super User group. This group of individuals consists of the more frequent system users that are also required to assume a lead role in RoD within their respective division and provide periodic refresher training sessions to their user group.

Prepared by or under the supervision of: Kenneth Lomax and Richard Gianotti

Staff 1-12

Request:

Please describe training requirements for contract employees and those used in mutual aid agreements (if different than those for in-house); include frequency, duration, location, written records and names of trainers.

Response:

Upon arrival at either one of National Grid's properties or staging/material sites, Company Safety Representatives provide an approximate 30 minute, one-time overview/orientation to all foreign utility and/or contractor personnel using the material detailed in **Exhibit 1-12**. The overview/orientation, though, is performed each time a foreign utility or non-Alliance contractor renders mutual assistance to National Grid. Each time means a separate storm/emergency event that is not contiguous with a previous event.

Table 1-12-1 details the locations where foreign utilities and/or contractors may be directed to receive the overview/orientation in support of a New Hampshire restoration effort.

Table 1-12-1

Location	Type
Charlestown Roving Platform	Company facility - unstaffed
Lebanon Service Center	Company facility - staffed
Monroe HVDC Complex	Company facility - unstaffed
North Andover (MA) Service Center	Company facility - staffed
Rockingham Mall	Staging site
Rockingham Race Track	Staging site
Salem Service Center	Company facility - staffed
Tewksbury (MA) Service Center	Company facility - staffed

Table 1-12-2 on the following page details the names of Company Safety Representatives in New England that may serve as the presenters for the overview/orientation material in New Hampshire. Additional resources exist, if the event's scope and severity warrants such action.

Table 1-12-2

Name	Assigned Location
David Beattie	New England – North (Lebanon and Salem and North Andover, MA)
John Cameron	New England – North (Malden, MA)
Jerry Keene	New England – North (Worcester, MA)
Michael Knott	New England – North (North Andover, MA)
Michael Pazzanese	New England – North (North Andover, MA)
John Weagraff	Corporate (Waltham, MA)

Prepared by or under the supervision of: John Weagraff

Staff 1-13

Request:

Please include a break-out of field personnel as well as support personnel, with responsibilities and duties for each in an outage and restoration scenario.

Response:

Section .104.02 of the New England EEPs details the Division/District storm positions and their pre-emergency and emergency responsibilities that may be used as part of a restoration effort. The following listing identifies the storm positions by title:

- Division Storm Director
- Division Emergency Operations Coordinator
- Damage Assessment Coordinator
- Damage Assessor
- Dispatcher
- Employee Support Coordinator
- Field Guide Coordinator
- Field Guide
- Outside Crew Coordinator
- Overhead and Underground ("OH & UG") Crew Coordinator
- PowerOn or PowerOn Orders ("PORD") Analyst
- Resources Coordinator
- Storm/Emergency Assignment Listing ("SEAL")/Retiree Coordinator
- Tree Crew Coordinator
- Trouble Room Coordinator
- Wires Down Coordinator
- Wires Down Appraiser
- Wires Down Standby

Prepared by or under the supervision of: Thomas Murphy

Staff 1-14

Request:

Please provide your company's definition of and job description for the following:

a) line crew;
b) tree trimming crew;
c) bucket crew;
d) digger crew.

Response:

a. **Line Crew** - A line crew is comprised of two or more qualified electric workers per industry and regulatory (OSHA) standards. Such workers are qualified to construct and/or repair distribution or transmission overhead and underground electric infrastructure.

b. **Tree Trimming Crew** - A tree trimming crew is comprised of two or more qualified tree workers per industry and regulatory (OSHA) standards. Such workers are qualified to respond to (cut and clear) tree damage that is interfering or could interfere with the operation of the electric system.

Duties:

Under general supervision to perform the duties of tree trimming and cutting, tree removal, selective right-of-way clearing, landscaping installation and maintenance, and herbicide application.

Qualifications:

- Must have 2 years experience at the Journeyman level and the crew must consist of at least a Journeyman Trimmer and a Tree Trimmer Trainee (2 years)
- Must demonstrate the knowledge, skills and ability to perform tree maintenance around energized electrical conductors, tree identification, and herbicide application and techniques.

c. **Bucket Crew** - A line crew (see 14a. above) utilizing an insulated aerial lift to access electric infrastructure for repair or construction. The insulated aerial lift is vehicle mounted. The vehicle is also used as transport of personnel and material.

d. **Digger Crew** – A line crew (see 14a. above) utilizing a line truck – a vehicle with a corner mount or center mount derrick to replace, repair or construct electric distribution infrastructure. Such work will include replacement or repair of utility poles, transformers

and other pole or pad-mounted equipment or hardware. The vehicle is also used for transport of personnel and material.

Prepared by or under the supervision of: Ray Reyes and Timothy Bodkin

Staff 1-15

Request:

Please provide the number of crews employed full-time by your company for each of the following years: 2004, 2005, 2006, 2007 and 2008, differentiating numbers for internal and contract crews for each of the following:

a) line crews
b) tree trimming crews
c) bucket crews
d) digger crews

Response:

The responses to Staff 1-15a. – d. are presented below as Table 1-15.

Table 1-15

Type	2004	2005	2006	2007	2008
Internal Line (Bucket)	10.5	9.5	10	9.5	10
Internal Line (Digger)[1]	0	0	0	0	0
Contractor Line (Bucket)	N/A[2]	3	4	4	2
Contractor Line (Digger)	N/A[3]	0	0	0	0
Contractor Tree	6	6	8	8	8

Notes:

1. Diggers are made available for crew use as needed depending on the specific nature of assigned projects and jobs. Typically, three diggers are located in New Hampshire within the Charlestown, Lebanon, and Salem work areas. Internal line crews are primarily overhead bucket crews.

2. Construction Delivery, as a new functional group in 2004, started to manage New Hampshire projects in 2005. Contract crews are primarily overhead bucket crews.

3. Diggers are made available for crew use as needed depending on the specific nature of assigned projects and jobs. Also, contractor crew counts are generally driven by the number of actual projects identified within that year's work plan in the respective geographic region – New Hampshire.

Prepared by or under the supervision of: Kurt Demmer, Arthur Curran, and Timothy Bodkin

Staff 1-16

Request:

Please provide a general description of the obligation of contract crews for storm restoration.

Response:

Alliance Contractors, a core group of external resources that conduct year-round on-site work on National Grid projects are obligated during storm periods to make those contracted crews available as part of the restoration effort. The contractors' work performance during storms is consistent with agreed rates and the terms and conditions of their current Labor Agreements between the applicable IBEW Locals and NECA. The Company might (at times) request additional crews from the Alliance Contractor, but both the Company and contractor understand that the contractor's first obligation remains to their respective project owner, which frequently means other electric utilities in the region.

If additional storm restoration crews are requested, the Alliance Contractor is responsible for seeking release from the other utilities. Once the contracted crews are released from storm work by National Grid, they return to their National Grid projects. The release process is based on damage in a particular region, as opposed to any set time commitment. In fact, the contractor release may be staggered to ensure appropriate coverage across all impacted areas. National Grid may (as the situation dictates) release some crews or all the crews at any given time to routine work; regardless of whether or not other contractor and/or owner crews continue on storm restoration work.

Similar work arrangements have been established for dedicated tree contractors retained by the Company.

Prepared by or under the supervision of: Arthur Curran and Timothy Bodkin

Staff 1-17

Request:

Please provide any restrictions or enhancements from labor contracts that are included in restoration planning efforts.

Response:

The applicable labor contracts reference the following Articles and Sections that are applied during storm work:

Article IX, B.

Section 7. Emergency Storm Work Premium

a. It is sometimes necessary to assign employees of the Overhead Lines Departments outside their district because of severe storms causing extensive interruptions to service.

b. When these employees are so assigned to work outside their district for a period of more than 24 hours, including travel time, the method of payment will be as follows:

1. The outside physical workers so assigned will be paid for working time at the rate of one and one-half times their regular straight time rate and for rest time at their regular straight time rate.

2. The Rest Period Policy will not apply during this emergency work when employees are being paid under the above paragraph, but every effort will be made to give employees adequate rest time. It is intended that an employee who has worked continuously for sixteen hours be given at least six hours rest and be paid for this rest time at his regular straight time rate, but if it is not given, the employee will be entitled to compensating rest time at a later time for that portion of the six hours rest time which was not given.

3. If a holiday occurs during this assignment, working time shall be paid for at the rate of two and one-half times their regular straight time rate and rest time at the regular straight time rate.

4. When the assignment is completed and the employees have returned to their own district, the normal method of payment and rest time procedures will be in effect.

5. The outside physical employees in the working area of the district to which outside System employees have been assigned will be paid according to the same premium method as the assigned crews, and the rest period application will be the same, beginning at the time the first outside crew is assigned to the district and continuing until the assignment is complete and the crews have been released, at which time the normal method of payment and rest period application will be in effect.

6. A Construction Services crew working previous to and at the time of the emergency on non-emergency duties within a district will not be considered to be an outside crew for the determination of the paragraph (5) above.

Section 8. Emergency Storm Work Premium – Stores, Fleet, Operations Engineering, Metering Services and Customer Service Departments

a. It is sometimes necessary for employees in the Stores, Fleet, Operations Engineering, Metering Services and Customer Service Departments to work extended hours because of severe storms causing extensive interruptions to service.

b. When employees in the Overhead Lines department work outside of their district due to such conditions and they qualify for the payment of the "Emergency Storm Work Premium," which is provided for in this agreement, the Company's method of payment to employees in the Stores, Fleet, Operations Engineering, Metering Services and Customer Service departments working in the district receiving outside crews will be as follows when they work the extended hours set forth below:

1. Employees in the Stores, Fleet, Operations Engineering, Metering Services and Customer Service departments, who are assigned to work twelve (12) consecutive hours or more during such times will be paid for their working time at the rate of one and one-half times their regular straight time rate.

2. Such employees will not receive any pay for rest time during such times, and they shall only be entitled to receive the pay set forth in the paragraph above when the Overhead Lines Department employees working outside their district are entitled to receive emergency storm work premiums.

3. The Rest Period Policy will not apply during this emergency work when employees are being paid under the first paragraph, but every effort will be made to give employees adequate rest time. It is intended that an employee who has worked continuously for sixteen

hours be given at least six hours rest. If it is not given, the employee will be entitled to compensating rest time at a later time for that portion of the six hours rest time which was not given.

4. Work schedules will be changed when necessary to meet the service restoration requirements. The Company does not intend to change shifts to avoid paying regularly accruing premiums on days of relief or holidays.

5. Employees, in the above-named departments, when assigned as outside physical workers, will be paid under the provisions of the Emergency Storm Work Premium – Overhead Lines (Section 6, subsection 5).

Section 9. Emergency Out of Town Assignments

It is imperative that the Company has the ability to respond to all regions with additional help in an expeditious and safe manner during emergencies. In order to accomplish this, the Company proposes:

a. Overhead, Underground, O&M and Fleet workers will have a bag packed at their work location with appropriate clothing, toiletries, etc, so as to be able to go out of town on emergencies for at least four days. The Company will provide a one time stipend of $40.00 to those groups of workers. Employees without a packed bag will not be eligible to go out of town.

b. Out-of town assignments will be limited to fully rated Line Workers, Splicers, and O&M workers. The assignment of lower-rated workers will be made only after all available, fully-rated workers are engaged.

c. Only workers with valid and updated CDL licenses, including updated DOT medical certificates, are eligible for out-of-town assignments.

d. Workers attending or training at any National Grid Training facilities will not be eligible for out-of-town assignments unless determined by the Company.

e. For advance notice of out of town assignments, employees called six hours or more in advance of the start time will not receive compensation from the time of the call. Employees called with less than six hours prior to the start time will be paid from the time of the call and acceptance of work..

f. Twenty-four hour DOT reset time will be at straight time.

Article IX, C

Section 6. Response To Overtime

a. Because of the nature of our business, and our need to provide 24-hour a day service to our customers, it is necessary that employees work a reasonable amount of overtime - planned and unplanned.

b. Troubleshooters or the shift workers on duty shall be the primary response to emergencies. If additional employees are required then those on stand-by pay shall be used. If additional employees are necessary, the call list process described below shall be utilized.

c. Employees shall furnish an acceptable means of off-hour contact by telephone.

d. Utilizing a rotating call list procedure:

1. If the local union Response to Overtime response rate is equal to or greater than the response rate below, then the entire local call list in the district will be called first, followed by the call list for the secondary platform applicable to the town involved as designated by the Company.

2. If the local union Response to Overtime response rate is less than the response rate below, then the local platform call list will be called first (but not the entire local), followed by available employees already responding to other emergencies in other local union areas, followed by the call list for the secondary platform applicable to the town involved as designated by the Company. Shift workers responding to emergencies may only work incidental overtime outside their local.

3. The response rate standard for the Overhead Lines, Underground and Substation O&M departments is 30%.

4. The lack of response records of employees will be reviewed on a periodic basis. Consideration will be given to the number of instances, the reasons for lack of response and the average response record of the employees in the department. If, as a result of this review, management considers that an employee's lack of response record is excessive, the employee will be reminded of his or her obligation to share in necessary overtime in an informal meeting with his supervisor. A continuing unsatisfactory response record will result in a formal meeting with the employee (with Union representation), and the employee will receive a written warning. A continued unsatisfactory response record may result in more severe disciplinary action.

5. For this purpose, the measure is calculated as the percent of calls made which result in a report to work. Employees who have worked 400 hours or more overtime in the preceding twelve months will be deemed to have met the standard regardless of acceptance rate to call outs and will not be subject to intervention consequences. Overtime hours resulting from an out of town storm restoration assignment to a non-National Grid affiliated company will not be counted towards the 400 hours. This standard is to be measured on a going-forward basis only in 6 month increments ending each calendar quarter following an adequate notice period to all affected employees. Employees who do not respond to a call will be charged with an instance for lack of response (exception - employees who are out on authorized absences). Employees shall not be charged with more than one instance in a twenty-four hour period or on consecutive days of relief. Employees unable to respond due to DOT regulation requirements and employees out on authorized absences will not be charged with non-response if called.

e. In the event the Company cannot get required resources from the procedure described above, supervisors and contractors may be used.

Prepared by or under the supervision of: Ray Reyes

Staff 1-18

Request:

Please describe use of electrician crews, either in-house or external, in expediting restoration times. If electricians were used, please state how many were used and on what dates, the number of meter posts restored, weatherheads reinstalled, or service drops they assisted with, and any other pertinent metrics including estimated hours/expenses incurred and estimated hours saved in utility crew time.

Response:

Seven (7) internal electrician (a/k/a service restoration) crews were used in the Salem area on the last two days (December 17, and 18) of the restoration effort. The majority of service repairs were made by line crews working on circuit restoration but adjacent or near impacted customers. A limiting factor with electrician crews was the absence of bucket trucks. This necessitated the collection of additional information (e.g., that the service drop and pole assets were in working order) before dispatching the electrician crew.

National Grid does not own the meter posts; therefore, these crews would not repair these assets. Weatherheads (in most cases) were not installed by the electrician crews because a weatherhead re-install would indicate possible service entrance cable damage and would require a wire inspector's approval prior to reenergizing (or making permanent connections if temporary electrician taps were installed by the customer).

When dispatched, each electrician crew had approximately 3-5 service drops to check as energized. The line hour savings that resulted from the use of electrician crews was estimated at approximately two hours per crew for a total of 14 line hours per day.

Prepared by or under the supervision of: Kurt Demmer and Joseph Luchini

Staff 1-19

Request:

Please provide the number of line crews, tree trimming crews, digger crews and bucket crews your company had available on December 9, December 10, December 11 and December 12. Please provide them both in total for your company and by division and area work center.

Response:

The response to Staff 1-19 is detailed below as Table 1-19.

Table 1-19

Type	Date	Charles-town	Lebanon	Salem	Total New Hampshire
Internal Line (Bucket)	09-Dec	1	3.5	3.5	8
	10-Dec	1	3.5	3.5	8
	11-Dec	1	3.5	3.5	8
	12-Dec	1	4.5	5.5	11
Internal Line (Digger)[1]	09-Dec	1	1	1	3
	10-Dec	1	1	1	3
	11-Dec	1	1	1	3
	12-Dec	1	1	1	3
Contractor Line (Bucket)	09-Dec	0	0	0	0
	10-Dec	0	0	0	0
	11-Dec	0	10	4	14
	12-Dec	7	3	6	16
Contractor Line (Digger)	09-Dec	0	0	0	0
	10-Dec	0	0	0	0
	11-Dec	0	3	0	3
	12-Dec	1	2	2	5
Contractor Tree	09-Dec	2	2	2	6
	10-Dec	2	2	2	6
	11-Dec	2	2	2	6
	12-Dec	6	4	14	24

Note:

1. These represent digger units available and not crew counts. Crew counts have been reported using the (Bucket) value.

Prepared by or under the supervision of: Kurt Demmer and Thomas Murphy

Staff 1-20

Request:

Please provide the timeframe in which your company sought additional crews for the December 2008 ice storm. Please provide actual times and dates when you contacted outside crews, the names of the companies whose crews were contacted, and the number and types of crews requested. Please also provide a description of the internal process and criteria by which those companies were chosen.

Response:

National Grid was aggressive in engaging the assistance of mutual assistance crews in response to Winter Storm 2008. Prior to the storm, National Grid made mutual assistance calls to three different regional mutual assistance groups: NEMAG, New York Mutual Assistance Group, and Mid-Atlantic Mutual Assistance. In addition, National Grid took advantage of EEI's "Restore Power" website, which as mentioned, contains a national repository of utilities willing to provide mutual assistance support to other utilities during emergencies. (*See* Exhibits 5-7).

The first mutual assistance call was requested by a NEMAG member on Wednesday, December 10, and scheduled for 8:30 a.m. on the following day, December 11. National Grid, along with other NEMAG member utilities, participated in the call. The December 11 call revealed that all New England utilities anticipated that the forecasted storm would impact their service territories. It also revealed that the forecasted ice accretion amounts had increased to in excess of one inch in some areas.

As a result of this call, National Grid requested a larger call group to include not only NEMAG, but both the New York Mutual Assistance Group and Mid-Atlantic Mutual Assistance Group member utilities. This call was scheduled for 6:00 a.m. on Friday, December 12. During this call, reported damage from NEMAG members varied greatly. National Grid reported approximately 250,000 customer interruptions in its New England service territories, while another utility estimated approximately 290,000 customer interruptions. Other utilities responded with estimates ranging from only a few thousand interruptions, to tens of thousands of customer interruptions. Participants on the call anticipated that these estimates would increase as the storm lingered. As a result, National Grid continued to request resources from mutual assistance utilities.

A representative from Baltimore Gas & Electric, a Mid-Atlantic Mutual Assistance Group member, agreed to coordinate the pooling of resources for NEMAG. During a scheduled 12:00 p.m. call on December 12, National Grid reported a peak of over 500,000 customer interruptions in its U.S. footprint.

Some of the mutual assistance resources National Grid acquired for its New England region via this call included:

- American Electric Power (Ohio)
- Dominion (Virginia)
- Consumers Energy (Ohio)
- Northern Indiana Public Service Company (Indiana)
- NStar (Massachusetts)
- Pepco Holdings, Inc. (Delaware/Maryland)
- Vectren Corporation (Indiana)

National Grid also received assistance from line contractors located in Indiana, Michigan, North Carolina, Ohio, Pennsylvania, Tennessee, and Virginia.

Although no further NEMAG calls were held once the available resources were assigned, the impacted utilities remained in contact with one another as their respective restoration efforts progressed. With this on-going communication, National Grid requested additional resources from the Mid-Atlantic Mutual Assistance Group on Sunday, December 14. Baltimore Gas & Electric (Maryland) and Public Service Enterprise Group (New Jersey) responded to the mutual assistance request with a number of internal line crews.

Table 1-20-1 depicts the mutual assistance requests made by the New England Emergency Operations Center for December 2008 ice storm.

Table 1-20-1

Utility Name	Date/Time Contacted
AEP (Ohio)	12/12/2008 13:00
Allegheny Power	12/12/2008 13:00
Baltimore Gas & Electric	12/12/2008 13:00
	12/13/2008 10:00
	12/14/2008 11:30
Bangor-Hydro	12/12/2008 13:00
Central Maine Power	12/12/2008 13:00
Central Vermont Public Svc	12/12/2008 13:00
Consolidated Edison	12/12/2008 13:00
	12/13/2008 10:30
Consolidated Edison - Orange & Rockland	12/12/2008 13:00
	12/14/2008 11:30
Dayton Power & Light	12/12/2008 13:00
	12/13/2008 10:00
	12/14/2008 11:30

Utility Name	Date/Time Contacted
Detroit Edison	12/12/2008 14:00
Dominion	12/12/2008 13:00
Duke Energy (Ohio)	12/12/2008 13:00
	12/13/2008 12:00
Duquesne Light	12/12/2008 13:00
	12/13/2008 11:30
	12/14/2008 12:00
First Energy (Pennsylvania)	12/12/2008 13:00
	12/14/2008 12:30
Green Mountain Power	12/12/2008 13:00
Hydro One	12/12/2008 13:00
	12/13/2008 10:15
	12/14/2008 11:45
	12/15/2008 9:00
Hydro-Quebec	12/12/2008 13:00
	12/14/2008 12:00
New Brunswick Power	12/12/2008 13:00
	12/13/2008 11:00
Northern Indian Public Service Company (NIPSCo)	12/12/2008 13:00
Northeast Utilities	12/12/2008 13:00
Nova Scotia Power	12/12/2008 13:00
	12/13/2008 14:00
NStar	12/12/2008 13:00
	12/13/2008 13:00
	12/14/2008 15:00
PECO Energy	12/12/2008 13:00
PHI - Connectiv	12/12/2008 13:00
PHI - PEPCO	12/12/2008 13:00
	12/14/2008 12:00
PPL	12/12/2008 13:00
	12/14/2008 11:30
PSEG	12/12/2008 13:00
	12/13/2008 13:00
	12/14/2008 12:30
UGI	12/12/2008 13:00

Utility Name	Date/Time Contacted
	12/14/2008 11:00
United Illuminating	12/12/2008 13:00
Unitil Energy	12/12/2008 13:00
Vectren Energy	12/12/2008 13:00

Distribution Line Contractor Crews

On December 11, 2008, National Grid's Construction Delivery organization ("Construction Delivery") immediately activated its Emergency Storm Roles to minimize contractor mobilization time and overall restoration time.

Construction Delivery, under the direction of the New England Emergency Operations Center, pre-positioned some of the Company's New England alliance contracted workforce to division-identified readiness locations in support of the anticipated restoration. Further, Construction Delivery was requested to procure additional resources from the Company's established emergency contractor list. These resources have existing emergency contracts in place with National Grid and were rapidly mobilized.

After the Company's emergency contractor list was exhausted, Construction Delivery, with the support of Procurement Services, successfully reached out to additional resources from other regions in the United States and Canada. Emergency contracts were placed as needed and resources were mobilized quickly.

National Grid's ability to hire contractors for distribution line work was enhanced by the fact that the Company does business regularly with large national and local contractors. Some of these vendors also perform work for other utilities, outside of the region. With the approval of their "home" utility company (therefore "mutual assistance"), these contractors can mobilize large numbers of supplemental crews and on a priority basis can quickly move resources from one part of the country to the other, if needed to assist in storm events.

Distribution Forestry Crews

Similar to contractor line crews, the Company's ability to hire contractors for tree work was enhanced by the fact that the Company does business regularly with large national and local contractors. The Company works with large tree vendors who also do work for other utilities and specialize in tree trimming and removal services. These vendors provide emergency services on a priority basis and, with the approval of their "home" utility companies, have the ability to quickly move resources from one part of the country to the other, if needed to assist in storm events.

Distribution Forestry contacted three tree contractors on Wednesday, December 10, 2008 at 8:00 p.m. to determine crew availability. These contractors were Asplundh Tree Expert, Nelson Tree Service and Lewis Tree Service. Of these, 105 crews from Asplundh Tree Expert were readied

for deployment from neighboring, potentially unaffected utilities, in preparation of the storm event. These crews were deployed to National Grid in New England on Friday December 12 at 6:00 a.m.

Mutual Assistance to Other Utilities

During the course of the storm, the New England Emergency Operations Center was in communication via e-mail with the New Hampshire Emergency Operations Center, providing information and monitoring the status of other utilities' restoration efforts. Once its own restoration efforts were substantially complete, National Grid was in a position to support other New Hampshire utilities that had continued resource needs. On December 19, 2008, as crews were released from our New Hampshire and Massachusetts restoration efforts, 86 contractor line crews were released to Northeast Utilities – Public Service Company of New Hampshire ("PSNH") to assist that utility's on-going restoration effort.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-21

Request:

Please provide the timeframes in which mutual aid companies confirmed that crews were available and line crews actually began working in the field on the distribution /transmission system (include travel time, quartering time, training time and other time periods that are required before start time). Please provide breakdowns by company and crew.

Response:

Table 1-21 details the contractor line and tree crews that rendered assistance in New Hampshire. However, no foreign utilities were used as part of the restoration effort.

Table 1-21

Contractor Name	Crew Type	No. of Crews	Depart (Date/Time)	Arrival (Date/Time)	Start Work (Date/Time)
Asplundh	Tree	6	12/11/08 07:00	12/11/08 07:00	12/12/08 06:00
Asplundh	Tree	18	12/12/08 07:00	12/12/08 15:00	12/12/08 06:00
Hawkeye	Line	4	12/11/08 12:00	12/11/08 19:00	12/12/08 06:00
Thiro	Line	4	12/11/08 14:00	12/11/08 20:00	12/12/08 06:00
Thiro	Line	6	12/11/08 14:00	12/11/08 20:00	12/12/08 06:00
Hawkeye	Line	2	12/12/08 06:00	12/12/08 09:00	12/12/08 12:00
Lee Electric	Line	13	12/12/08 09:00	12/13/08 21:00	12/14/08 06:00

Prepared by or under the supervision of: Thomas Murphy

Staff 1-22

Request:

Please provide the total number of crews available for each day of the December 2008 ice storm starting on December 11 and ending on the last day of restoration. Please break out the crews by line service crews, bucket crews, tree trimming crews and digger crews and other (describe). Please indicate whether the crews were the company's own crews, those of an affiliate or an outside contract crew.

Response:

Table 1-22 details the number of crews that assisted in the New Hampshire restoration effort from Thursday, December 11 to Thursday, December 18, 2008 – the last day of restoration.

Table 1-22

Restoration Function	Dec 11	Dec 12	Dec 13	Dec 14	Dec 15	Dec 16	Dec 17	Dec 18
Distribution								
NH Line (Bucket)	8	9	9	9	9	9	9	11.5
NH Line (Digger)[1]	3	3	3	3	3	3	3	6
MA Line (Bucket)	0	2	2	0	0	2	3	6
MA Line (Digger)[1]	0	0	0	0	0	0	0	4
Trouble-men[2]	2	2	4	4	4	6	6	8
Substation O&M	5	5	6	5	4	6	6	6
Contractor Line (Bucket)	14	16	16	29	29	23	21	25
Contractor Line (Digger)[1]	3	5	4	4	4	4	4	4
Foreign Utility	0	0	0	0	0	0	0	0
Sub-Total	35	42	44	54	53	53	52	70.5
Services and Transmission								
Service Restoration	0	0	0	0	0	0	7	7
Trans Line	0	0	0	0	0	0	0	0
Trans Contractor Line	0	0	0	0	0	0	0	0
Sub-Total	0	0	0	0	0	0	7	7
Forestry								
Contractor Tree	6	24	24	24	21	21	20	20
Sub-Total	6	24	24	24	21	21	20	20
Damage Assessment and Administrative								
Damage Assessor	0	12	10	10	10	10	10	10
Wire Down	0	20	46	62	58	70	68	68
Other (Clerical)	2	2	2	2	3	3	3	3
Sub-Total	2	34	58	74	71	83	81	81
Grand Total	**37**	**76**	**102**	**128**	**124**	**136**	**140**	**158.5**

Notes:

1. These represent digger units available and not crew counts. Crew counts have been reported using the (Bucket) value.

2. Trouble-men are single person crews, while all other Distribution restoration functions represent two-person crews.

Prepared by or under the supervision of: Kurt Demmer and Thomas Murphy

Staff 1-23

Request:

Please describe any difficulties encountered in providing for hotel and meal accommodations for restoration workers when the public is competing for the same facilities due to power outages.

Response:

The Company maintains a comprehensive database of hotels/motels across New England via the Resources on Demand crew tracking and lodging application. During the December 2008 ice storm, National Grid lodged contractor line and tree resources after taking into consideration the hotels/motel's proximity to the restoration effort, current and extended room availability, ease of parking, permission to refuel vehicles on-site, feeding arrangements on-site, past lodging experiences, and whether or not the Company had an existing purchase order with the hotel/motel.

During this event, the Company began reserving the most "desirable" hotels/motels on Friday, December 12. Lodging accommodations were reserved at the next tier of establishments as the number of resources increased over the weekend (December 13-14) and into the following week. In addition to power outages, room vacancy can be impacted by competition from other sources such as: conventions, weddings, business meetings, etc.
.
The only notable difficulty was locating lodging in close proximity to the restoration effort that had not lost power themselves. This became less of a concern as customers were restored.

Prepared by or under the supervision of: Kevin Kelly

Staff 1-24

Request:

Please describe methods used to keep crews fed during restoration efforts so as to maximize restoration work hours. Are box meals used for lunches, breakfasts, and dinners in an effort to limit the travel time needed to go to area restaurants?

Response:

The typical work day commenced at 5:00 a.m. (4:00 a.m. wake-up calls) and ended at 9:00 p.m. This resulted in a 16-hour work day with eight hours of rest. All meals were included in the work day time period but scheduled at either the beginning or end to maximize crew productivity.

The contractor line and tree crews generally ate breakfast at their hotels/motels and National Grid arranged for the establishments to serve breakfast earlier than their normal operating hours (i.e., 5:00 a.m.). This maximized the number of daylight hours available to the crews. Boxed lunches were provided to the Company by area restaurants and dispersed at mid-day to the crews at their respective work locations. For dinner, crews ate at the end of their shift (usually around 8:00 p.m.) at either the hotels/motels or at Company-arranged restaurants.

Prepared by or under the supervision of: Kevin Kelly

Staff 1-25

Request:

Please indicate when the company considers the last customer restored associated with the December 2008 ice storm.

Response:

The Company reported the last customer with no power associated with the December 2008 ice storm in New Hampshire as being restored on Thursday, December 18, 2008 at approximately 10:05 p.m.

Prepared by or under the supervision of: John Spink

Staff 1-26

Request:

Did the company differentiate the ice storm from the weather events that occurred on December 17, December 19, and December 21, or are the outage numbers and restoration numbers reported inclusive?

Response:

The weather event on December 17 and associated outage and restoration numbers were inclusive of the December 2008 ice storm because the restoration effort continued until December 18. The weather events of December 19 and 21 were not inclusive of the December 2008 ice storm and were managed as separate incidents.

Prepared by or under the supervision of: Kurt Demmer

Staff 1-27

Request:

Please provide the number of damage assessment personnel used by your company during the December 2008 ice storm. Please provide their names and a description of their experience in assessing damage.

Response:

Table 1-27-1 details the number of Distribution Damage Assessors and Wires Down personnel that were assigned to the New Hampshire restoration effort between December 11 and 18, 2008. The two groups worked in conjunction with one another via the Wires Down Coordinator. As the Damage Assessors reported public safety issues to the coordinator, a Wires Down person was assigned to safeguard the hazard until a line crew made the area safe.

Table 1-27-1

	Dec 11	Dec 12	Dec 13	Dec 14	Dec 15	Dec 16	Dec 17	Dec 18
Damage Assessor	0	12	10	10	10	10	10	10
Wires Down	0	20	46	62	58	70	68	68

Table 1-27-2 identifies the names and titles of the 12 Distribution Damage Assessors that conducted the damage assessment in New Hampshire. Their title and functional group denote their experience in assessing damage.

Name	Position Title
David Aguiar	Sr. Design Tech., Ops. Eng. Spt.
David Boucher	Sr. Design Tech., Ops. Eng. Spt.
Christian Brouillard	Director, Inv. & WP Long Term Plng.
Michael Busby	Sr. Spvr., Elec. Const. Svcs.
Dena Champy	Manager, Dist. Proj. Mgmt.
Daniel Desmarais	Design Asst., Ops. Eng. Spt.
Jeffrey Faber	Director, Dist. Design Mgmt.
Robert Hebert	Contractor, Ops. Eng.
John Lenihan	Contractor, Dist. Protect. Eng.
George Prosman	Contractor, Ops. Eng.
Stefanie Steeves	Design Asst., Ops. Eng. Spt.
Steven Towle	Sr. Real Estate Rep. Real Estate Asset Mgmt

Prepared by or under the supervision of: Kurt Demmer and Thomas Murphy

Staff 1-28

Request:

Please provide a list of all transmission line outages that occurred during the December 2008 ice storm. Please be specific to line/circuit number, location, time of outage, cause, and number of customers affected.

Response:

There were four outages of transmission circuits in New Hampshire due to the December 2008 ice storm. Table 1-28 below lists the detail requested for these outages.

Table 1-28

Circuit ID	Circuit Name	kV	Date/Time	Damage	Customers Affected
A201	Comerford - North Litchfield	230	12/12/08 3:55 a.m.	Locked out. Multiple trees on the line near Dunbarton SW Tower	0
J136N	Bellow Falls - Flagg Pond	115	12/12/08 1:06 a.m.	Locked out. Multiple trees down: Str 210-211, 285-286 & at RT 101 where Cu conductor was damaged.	0
O215	North Litchfield - Tewksbury	230	12/12/08 3:05 a.m.	Tripped and reclosed auto during the storm. Helo patrol found no damage.	0
Y151	Hudson - Tewksbury	115	12/12/08 7:29 a.m.	Locked out. Trees down at two locations near High Plain Rd. in Massachusetts	10,291 (Massachusetts)

Prepared by or under the supervision of: Kate Darwin

Staff 1-29

Request:

Please provide a list of all sub-transmission outages that occurred during the December 2008 ice storm. Please be specific to line/circuit number, location, time of outage, cause and number of customers affected.

Response:

Two sub-transmission outages were reported following the December 2008 ice storm – 4401 (46 kV) and 4402 (46 kV) Lines in Walpole/Charlestown on December 12, 2008.
Date: 12/12/2008

Locations and Customers Affected:

Charlestown Substation #8 De-energized

8L1 Feeder – 1,671 Customers (Charlestown Customers)
Time Off: 3:35 a.m. Time On: 10:00 a.m.
Duration: 6 hours 25 minutes
Cause: Phases down between Poles 84 and 85 on the National Grid 4401 Right-of-Way.
4401 Line was re-energized from the Central Vermont Public Service ("CVPS") source side of line.

Walpole Vilas Bridge Substation #12 De-energized

12L1 Feeder – 2,211 Customers (Walpole Customers)
Not Part of 4401/4402 Outage.
Cause: Phases Down on Distribution Feeder

12L1 Feeder – 119 Customers (Walpole Customers)
Part of 4401/4402 Outage.
Time Off: 1:34 a.m. Time On: 1:00 p.m.
Duration: 11 hours 26 minutes
Cause: Loss of both 4401 and 4402. Tree on the CVPS Side of 4402 Line. 4402 Line was re-energized from National Grid source at Bellows Falls Substation.

Prepared by or under the supervision of: Kurt Demmer

Staff 1-30

Request:

Please provide a list of all substations that were out of service during the December 2008 ice storm. Please be specific to time and cause of the substation outage as well as number of customers affected.

Response:

Table 1-30 details the substations that were out of service in New Hampshire during the December 2008 ice storm.

Table 1-30

Substation	Date Out	Time Out	Customers Interruptions	Cause of Outage
Charlestown	12/12/2008	3:35 a.m.	1,705	Phases down on sub-transmission line supplying this station; numerous trees and limbs on wires
Pelham	12/11/2008	11:09 a.m.	5,401	Trees on transmission line supplying this station; numerous trees and limbs on wires
Spickett River	12/11/2008	11:48 a.m.	4,632	Tree on sub-transmission line supplying this station; numerous trees and limbs on wires
Vilas Bridge	12/12/2008	3:35 a.m.	3,497	Phases down on sub-transmission line supplying this station; numerous trees and limbs on wires

Prepared by or under the supervision of: John Spink

Staff 1-31

Request:

Please provide for the years 2002–2008 the total number of transmission and sub-transmission circuit miles by voltage class (*i.e.*, 345 kV, 115 kV, 69 kV or 34.5 kV).

Response:

The total number of transmission and sub-transmission circuit miles was unchanged between 2002 and 2008. Table 1-31-1 details the transmission circuit miles and associated voltages in New Hampshire.

Table 1-31-1

Circuit Miles	Voltage (kV)
108.1	450 (DC)
0	345
267.3	230
42.5	115
0.4	69
418.3 miles total	

Table 1-31-2 details the sub-transmission circuit miles and associated voltages in New Hampshire. Sub-transmission is regarded as less than 69 kV in voltage.

Circuit Miles	Voltage (kV)
14.8	23
882	13.8
896.8 miles total	

Prepared by or under the supervision of: Kate Darwin

Staff 1-32

Request:

Please provide for the years 2002–2008 the amount expended on vegetation management and the circuit miles trimmed, broken down by transmission voltage class.

Response:

Distribution Forestry

National Grid's vegetation management program consists of a reliability based strategy of cycle pruning and enhanced hazard tree mitigation ("EHTM"). This reliability-based program began in 2003 with a conversion from town-based trimming to feeder-based trimming. During this conversion, each circuit was scheduled into a cycle-based approach, with full conversion nearing completion at the end of 2009.

The cycle-based approach included an optimal cycle length set for each area based on growing season, growth characteristics of predominant tree species in that area, and clearance to be created by pruning. **Exhibit 1-32(a)** details the Company's Vegetation Management Strategy.

For New Hampshire, this cycle length is 5 years. As cycle length was formulated, the Company established goals for the number of miles of overhead distribution line to be pruned each year to reach that 5 year cycle and scheduled feeders that provided the best reliability return for the expense first. For a full five-year history, please refer to **Exhibit 1-32(b)**, which is the New Hampshire distribution maintenance schedule for the last five years.

In addition, National Grid has increased its pruning specifications to include the removal of dead, dying or structurally-weakened limbs from above the primary wires, as well as adding a storm prevention provision which includes shortening all overhanging pine species boughs beyond the overhead clearance limit to reduce the likelihood of long pine boughs loaded with ice or wet snow from drooping down or breaking onto the conductors. **Exhibit 1-32(c)** details the Distribution Specification to which tree and limb management is assessed.

The Company also targets the removal of "hazard trees" as additional interruption prevention measures. While pruning provides a measure of public safety, improves access for our crews, and has some reliability benefit, the removal of hazard trees and hazardous conditions over the primary wires has the direct effect of minimizing future tree interruptions.

For this reason, the Company instituted the EHTM program in 2007. This program is an extensive, tree and limb removal program, done in addition to the cycle pruning program. It is intended to minimize the frequency and damaging affect of tree and limb failures. This program is applied to select circuits primarily based on reliability performance, and may also be done

while a circuit is undergoing cycle pruning. It focuses on the removal of hazard trees and dead, dying, or structurally weakened overhead branches.

The Company's vegetation management vendors are required to follow its distribution pruning specification and are closely monitored for compliance with these requirements. Each vendor is currently under contract with the Company to provide the pruning services for a given area. The Company moved to competitive bidding in 2005 which places the requirement for productivity on the vendors and allows National Grid's arborist to focus on the pruning specifications and quality of work. To ensure compliance with specifications and quality, the Company's arborists complete a full audit of all work completed.

In addition, the Company's standard for distribution construction calls for "spacer cable" and "tree wire" to be installed in treed areas. Such construction is inherently tree resistant when compared with traditional bare wire – cross arm construction, thereby complimenting the Company's vegetation management efforts.

Table 1-32-1 details the Distribution Cycle Prune History for New Hampshire from 2002 through 2008.

Table 1-32-1

National Grid – New Hampshire Cycle Prune History 2002-2008 Distribution Voltage	
FY 2002	145 miles
FY 2003	114 miles
FY 2004	216 miles
FY 2005	90 miles
FY 2006	188 miles
FY 2007	180 miles
FY 2008	180 miles
FY 2009	(projected) 176 miles

Table 1-32-2 details the Distribution Budget Spend History for Cycle Prune and Tree Hazard removal for New Hampshire from 2002 through 2008.

Table 1-32-2

National Grid – New Hampshire Cycle Prune and Hazard Tree Removal Budget Spend History 2002-2008 Distribution Voltage	
FY 2002	$ 535,600
FY 2003	$ 569,900
FY 2004	$ 1,044,100

National Grid – New Hampshire Cycle Prune and Hazard Tree Removal Budget Spend History 2002-2008 Distribution Voltage	
FY 2005	$ 864,800
FY 2006	$ 575,600
FY 2007	$ 813,300
FY 2008	$ 1,589,600
FY 2009	(projected) $ 1,045,000

Transmission Forestry

The primary objective of National Grid's Vegetation Management Plan ("VMP") is to minimize outages due to vegetation. Other objectives of the VMP include providing a clear and safe work space and access for maintenance activities.

The Company's strategic approach to vegetation management within the rights-of-way is to establish and maintain rights-of-way that are largely clear of all incompatible vegetation while maintaining a stable low-growing plant community that is pleasing to the eye and beneficial to wildlife. National Grid's strategic approach to manage vegetation adjacent to the rights-of-way is to prune and/or remove danger trees and/or hazard trees where property rights allow vegetation management work.

Rights-of-way that are largely clear of incompatible vegetation present a very low risk of vegetation-caused outages. Vegetation adjacent to rights-of-way (danger and hazard trees) presents a greater risk of outages. The risk from danger trees and hazard trees is related to the following variables: the distance from conductor to the adjacent tree line, conductor distance above the ground, height of trees, tree species, and tree health and condition. The Company seeks to mitigate risk of outages from trees adjacent to the right-of-way through site specific management of these variables.

Vegetation management work on transmission and distribution rights-of-way is organized into two programs:

- **Right-of-Way Floor Program** – management of vegetation within the right-of-way corridor and
- **Off Right-of-Way Danger Tree Program** – management of vegetation adjacent to the right-of-way corridor.

To achieve its vegetation management objectives, National Grid utilizes an Integrated Vegetation Management ("IVM") approach which emphasizes selective herbicide use to control incompatible vegetation. IVM integrates the use of various methods of herbicide applications and non-herbicide mechanical vegetation management methods, and is used on both the right-of-way floor and the adjacent utility forest. The IVM program includes the use of herbicide

(supplied as Basal Application, Stump Application and Foliar Application), hand cutting, mowing, selective mowing and selective pruning methods.

The Transmission Forestry Department is responsible for system-wide design, planning, coordination and supervision of all right-of-way vegetation management operations. This includes, but is not limited to, preparing and implementing a VMP, scheduling work, estimating budgets, prescribing herbicides and application methods for each right-of-way, obtaining necessary permits, preparing required notifications, selecting contractors, spot checking treatment crews, and providing technical expertise and liaising between National Grid and landowners, local and state officials, or other interested parties. Transmission Forestry also provides local oversight, coordination and enforcement of vegetation management policy, procedures and the VMP on National Grid transmission rights-of-way.

Right-of-Way Floor Program

The Company's right-of-way floor program is a treatment operation which generally includes most of the vegetation management methods described herein. Herbicide treatments, employing herbicides and treatment methods consistent with the sensitivity of the site, shall be the preferred method of vegetation management. Three methods of herbicide treatments are utilized: basal application, cut stump application and low-volume and high-volume foliar applications.

Treatment is generally carried out in two phases: (1) Preparatory Treatment and (2) Foliar Treatment. These two phases may be carried out separately or simultaneously depending on vegetative conditions or permit requirements for each right-of-way segment.

Company Transmission Foresters identify right-of-way segments to be treated each year in the Annual Work Plan. Field inventories of each right-of-way segment to be treated are completed by Company Transmission Foresters and provided to the Contractor.

An IVM treatment operation is carried out within a treatment/calendar year. Preparatory treatment is generally completed prior to June 1 so that any vegetation approaching the minimum clearance distance is treated prior to new annual growth. Foliar treatment shall be completed prior to October 1 of each year. Certain sites requiring hand cutting, mowing and/or cut stump treatment may be carried out after October 1. National Grid contractors preparatory treat all vegetation approaching the Minimum Clearance Distance prior to June 1 of a treatment year to assure reliability of the line.

Cycle lengths for the right-of-way floor program range between 4-5 years. Rights-of-way that received floor treatment during the years 2002 though 2008 are presented in Table 1-32-3.

Off Right-of-Way Danger Tree Program

National Grid rights-of-way are generally cleared to their full width consistent with legal real estate rights and/or permits for initial construction of the electric lines. The forested landscape beyond the maintained right-of-way contains trees that are tall enough and close enough to electric conductors to be capable of growing or falling into the lines. These trees are classified as danger trees and hazard trees. A danger tree is a tree on or off the right-of-way that if it were cut or failed could contact electric lines. A hazard tree is a danger tree which due to species and/or structural defect is likely to fail and fall into the electric facility.

National Grid prunes or removes danger trees and hazard trees to reduce the risk of off right-of-way tree-caused outages. Trees are pruned to achieve At Time of Vegetation Management Clearance Distance from vegetation, in a radius around the conductor, at the time of vegetation management. Danger tree cycles for transmission and sub-transmission line rights-of-way range from 4-10 years.

National Grid Transmission Forestry staff is responsible for inspection of vegetation conditions on rights-of-way. Inspections are carried out for several purposes including, but not limited to: determination of treatment efficacy of herbicide floor work following work completion by contractors (the Spring following treatment); evaluation of efficacy of floor maintenance cycle length; planning danger tree work and patrolling the transmission system to find vegetation conditions that are an imminent threat to the reliability of the electric system.

It is important to note that during the December 2008 ice storm, the limited vegetation-caused transmission outages in New Hampshire were caused by off right-of-way trees.

Table 1-32-3 details the Budget Spend History for IVM, Side Line Trimming/Removal and Hazard Tree Removal for New Hampshire from 2002 through 2008.

Table 1-32-3

Year	Voltage (kV)	IVM	Side Line Trim/Removal	Hazard Tree Removals	Miles Trimmed	Totals	
2008	450 (DC)	$23,614	$0	$0	0	Total 2008 Cost	$387,658
	230	$288,497	$0	$10,036	0	Total 2008 Miles	3
	115	$2,646	$59,139	$3,726	3		
	69	$0	$0	$0	0		
	Sub Totals	$314,757	$59,139	$13,762	3		
2007	450 (DC)	$229,509	$0	$0	0	Total 2007 Cost	$1,036,170
	230	$600,871	$10,503	$16,572	1	Total 2007 Miles	1
	115	$146,022	$0	$3,688	0		
	69	$23,079	$0	$5,926	0		
	Sub Totals	$999,481	$10,503	$26,186	1		

Year	Voltage (kV)	IVM	Side Line Trim/Removal	Hazard Tree Removals	Miles Trimmed	Totals	
2006	450 (DC)	$96,413	$0	$1,599	0	Total 2006 Cost	$669,962
	230	$347,334	$125,857	$19,546	12	Total 2006 Miles	12
	115	$72,266	$0	$5,664	0		
	69	$0	$0	$1,283	0		
	Sub Totals	$516,013	$125,857	$28,092	12		
2005	450 (DC)	$0	$0	$6,396	0	Total 2005 Cost	$223,380
	230	$44,258	$98,213	$33,819	12	Total 2005 Miles	12
	115	$0	$0	$21,580	0		
	69	$2,635	$4,243	$12,236	0		
	Sub Totals	$46,893	$102,456	$74,031	12		
2004	450 (DC)	$4,613	$0	$0	0	Total 2004 Cost	$515,676
	230	$213,104	$6,135	$0	0	Total 2004 Miles	15
	115	$71,878	$210,826	$0	15		
	69	$6,279	$2,841	$0	0		
	Sub Totals	$295,874	$219,802	$0	15		
2003	450 (DC)	$8,539	$0	$0	0	Total 2003 Cost	$572,267
	230	$217,459	$6,554	$11,578	0	Total 2003 Miles	25
	115	$0	$307,993	$555	25		
	69	$19,589	$0	$0			
	Sub Totals	$245,587	$314,547	$12,133	25		
2002	450 (DC)	$47,498	$12,614	$0	0	Total 2002 Cost	$241,495
	230	$172,652	$0	$3,505	0	Total 2002 Miles	0
	115	$0	$3,157	$2,069	0		
	69	$0	$0	$0	0		
	Sub Totals	$220,150	$15,771	$5,574	0		

Notes:

IVM means Integrated Vegetation Management which emphasizes selective herbicide use to control incompatible vegetation.

Prepared by or under the supervision of: Timothy Bodkin and Dawn Travalini

Staff 1-33

Request:

Please provide best estimates by percentage of the number of trees or limbs that fell from outside rights of way and contacted electric facilities, causing an outage. Please break down those estimates by area work center and/or town.

Response:

Table 1-33 reports the percentage of trees that fell from outside a right-of-way and contacted an electric line. These locations were associated with the Charlestown Roving Platform.

Table 1-33

Circuit ID	Voltage (kV)	Location	Cause	Trees Outside ROW (%)
A201	230	Dunbarton	Tree on line	100
J136N	115	Keene	Tree on line	100
4401	46	Charlestown	Tree on CVPS line[1]	100
4402	46	Charlestown	Tree on CVPS line	100

Note:

1. CVPS is Central Vermont Public Service Company.

Prepared by or under the supervision of: Dawn Travalini

Staff 1-34

Request:

Please provide best estimates by percentage of the number of trees or limbs that fell within rights of way but beyond vegetation management clearance zones that contacted electric facilities and caused an outage. Please break down by area work center and/or town.

Response:

The Company's damage assessment indicates that none of the trees that fell within a right-of-way but beyond vegetation management clearance zones contacted an electric line or facilities that resulted in a customer interruption.

Prepared by or under the supervision of: Dawn Travalini

Staff 1-35

Request:

Please provide by voltage class the number of poles and cross arms broken during the December 2008 ice storm. Please indicate location by area work center, town and circuit number.

Response:

Table 1-35 identifies the work areas, voltage class, and estimated number of poles and cross-arms that were broken. A number of poles were set by Fairpoint Communications, which National Grid does not manage or track.

Table 1-35

Work Area	Town	Circuit ID	Voltage (kV)	Poles	Cross-arms
Lebanon/Charlestown	Acworth	12L1	15	1	0
Lebanon/Charlestown	Alstead	12L1	15	3	≈ 4
Lebanon/Charlestown	Walpole	12L2	15	9	≈ 19
Lebanon/Charlestown	Charlestown	8L1	15	1	≈ 1
Lebanon/Charlestown	Hanover	16L1	15	1	≈ 8
Lebanon/Charlestown	Lebanon	39L1	15	1	≈ 9
Lebanon/Charlestown	Lebanon	1L1	15	0	≈4
Lebanon/Charlestown	Plainfield	39L1	15	0	≈ 4
Lebanon/Charlestown	Plainfield	1L2	15	0	≈8
Salem	Salem	9L1	15	2	≈8
Salem	Salem	9L3	15	4	≈4
Salem	Windham	9L3	15	6	≈4
Salem	Salem	10L4	15	0	≈ 1
Salem	Salem	13L1	15	5	≈ 1
Salem	Salem	13L2	15	3	≈5
Salem	Pelham	14L1	15	3	≈3
Salem	Pelham	14L2	15	5	≈ 10
Salem	Pelham	14L3	15	4	≈8
Salem	Salem	18L2	15	0	≈ 5

Prepared by or under the supervision of: Kurt Demmer

Staff 1-36

Request:

For any transmission or sub-transmission poles broken in the above question, please indicate when the pole was last inspected prior to the December 2008 storm and what, if any, maintenance was performed on it.

Response:

None of National Grid's transmission or sub-transmission poles were damaged by the December 2008 ice storm in New Hampshire.

Prepared by or under the supervision of: Kate Darwin and Kurt Demmer

Staff 1-37

Request:

Please describe the inter-company communications systems used in field restoration efforts to communicate from field command centers to workers in the field (*e.g.*, voice radio systems, cell phones, etc.). Please differentiate different voice radio systems used.

Response:

National Grid uses several modes of communication between its work locations and Company vehicles. Two-way, low band (48 MHz) radios (licensed to National grid) are commonly used in New Hampshire. An extensive repeater network is maintained by the Company that permits radio communication across multiple and geographically distant work locations.

The other communication system is via mobile (digital) phone service from three, differing carriers (AT&T Wireless, Nextel, and Verizon Wireless). Mobile phones and/or runners are used exclusively with contractor and tree crews during restoration efforts.

Internal Field Construction Coordinators ("FCCs") use a Windows-based, mobile laptop platform (i.e., MWorks) for communicating with differing levels within the Company – District/Division/Region. The platform allows access to most Company network applications and e-mail. Fax machines are used occasionally by work locations to communicate assignments with the FCCs.

Prepared by or under the supervision of: Kurt Demmer

Staff 1-38

Request:

Please describe the frequency and types of communications methods most used between the field command centers to division/corporate command centers (*i.e.*, telephone conversations, emails, computerized reports, etc.).

Response:

Communications between Divisions Storm Rooms and the regional centers (e.g., Customer Contact Center, New England EOC, and Westborough Dispatch & Control) were conducted primarily via land-based voice and data networks. Dispatch & Control participated in Local Storm Conference Calls which were conducted approximately twice each day throughout the duration of the storm. A list of all distribution circuit breakers and recloser outages was also distributed by Dispatch & Control via e-mail approximately twice each day until 100% of the distribution mainlines were restored.

Prepared by or under the supervision of: Kurt Demmer and John Spink

Staff 1-39

Request:

Please describe how often conference calls were scheduled within companies (*e.g.*, 3 times daily: at 6 am, 2 pm, 8 pm; on an as-needed basis; etc.) and the personnel involved in scheduled calls.

Response:

System-wide storm conference calls were held three times daily at 8:00 a.m., 1:30 p.m., and 8:00 p.m. The first call for the December 2008 ice event was held on December 10, 2008 at 3:00 p.m. and the last call (for the System) was held on Saturday, December 20, 2008 at 1:00 p.m. A total of 29 storm conference calls were held throughout the restoration effort.

Exhibit 1-9(b) details the topics covered during a typical call, which includes the Roll Call and participating functional groups.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-40

Request:

For those companies using outage management systems please describe any such systems employed in restoration efforts and the perceived benefits of those systems.

Response:

National Grid uses General Electric's PowerOn for its outage management system. PowerOn supported the restoration effort by:

- Received information from our customers regarding reported outages, wires down, tree or partial power issues
- Based on customer-supplied information, predicted where failed devices exist in the System
- Managed estimated restoration times for outages, and making the same available to customers
- Helped prioritize restoration, providing data on critical customers and number of customers out by predicted device
- Provided outage summary information by town, region or other to Storm Management Teams and external agencies (e.g., regulators)
- Managed and assigned line and tree crews to like outages

Prepared by or under the supervision of: Thomas Towne

Staff 1-41

Request:

Please describe how many restoration efforts have been completed using the outage management system referenced in Q34 since inception or within the last 3 years, whichever time period is shorter.

Response:

The PowerOn outage management system became operational in New England on June 26, 2007. Since that time, all outages which have occurred in New Hampshire have been managed using this outage management system. Numerous small restoration efforts and at least four larger restoration efforts in New Hampshire have occurred since this system was activated.

Prepared by or under the supervision of: John Spink

Staff 1-42

Request:

Please describe community and public relations efforts employed during the storm, including the number of people employed and the number of communities assigned to local governments.

Response:

State Communications

Prior to the start of the December 2008 ice storm, National Grid's Emergency Planning function was in contact with the New Hampshire Public Utilities Commission ("PUC") and Office of Emergency Management ("OEM") with the New Hampshire Department of Homeland Security. Written updates on the weather forecast and the Company's planned response were distributed on Wednesday, December 10 and Thursday, December 11. During the restoration effort, the New England Emergency Operations Center provided twice daily updates of National Grid's status and progress.

Additionally, Regulatory Affairs personnel from the New England – North Division were in constant contact with the Governor's office, PUC officials and staff, as well as the Town of Salem Emergency Operations Center.

Local Communications

The Energy Solutions Services ("ESS") department of National Grid has the responsibility of communicating with state and local public officials during a storm or other emergency. The ESS department for the New England – North Division is headquartered in North Andover, Massachusetts. From this location, communications with communities in southern New Hampshire were established.

This ESS department consists of 19 people – the majority of which were involved in covering the communications activities of the restoration effort for the Merrimack Valley and Southern New Hampshire communities of the New England – North Division. During the storm event and following restoration effort, at least four people were dedicated to communicating with New Hampshire officials including the PUC, Governor's office, and the Town of Salem Emergency Operation Center.

Various forms of communication were established including:

- Notified officials that the Division Municipal Room phone line was activated
- Hosted conference calls for public officials
- Face-to-face visits between company personnel and local officials

- Proactive outreach to communities on a daily basis
- Follow up meetings with police and fire officials

Notified officials that the Municipal Room phone line was activated

On the morning of Friday, December 12 at 6:00 a.m., the Municipal Room in North Andover, Massachusetts was activated and readied to accept calls from the southern communities of the Company's New Hampshire service territory - Derry, Pelham, Salem, and Windham. Activating the municipal phone lines is a two step process:

(1) Faxed a letter to police, fire and other public officials notifying them that the Municipal Room was opened. The letter provided the direct phone number and the "wire down" number.

(2) The letter was followed up with a phone call to each community asking if they received the faxed information and that they understand that the municipal phone line has been activated.

The ESS department staffs the Municipal room throughout the duration of the storm. At the end of the restoration effort, the procedure was repeated with a faxed letter notifying the same set of officials that the Municipal Room and its phone lines will close shortly. The letter was followed up with a phone call to each community. The Municipal Room was closed on Friday, December 19.

The northern part of the Company's New Hampshire service territory (Charlestown, Lebanon, and Monroe areas), which are located along the Connecticut River, are not part of the Municipal Room's activities due to their remote locations. Instead, the ESS department establishes contact with these communities by having an Account Executive reach out to them from our Lebanon, New Hampshire Service Center. This method establishes a direct line of communications at a local level and has historically proved effective.

Host conference calls with public officials

The hosting of frequent conference calls with public officials was recommended following the 2008 System Storm Drill in July 2008. The December 2008 ice storm represents the first time in New England where this activity has been implemented. The conference calls were conducted by the Regional Director ESS and the Vice President EDO Division on a daily basis throughout the storm. The calls included a high-level overview of available resources, identified the problem areas, and provided an estimate as to when power would be restored. Specific questions were discouraged because of the large number of people participating in the call. They were encouraged to call the Municipal Room with any specific requests.

The Municipal Room conducted five daily conference calls. Although role call was not conducted, several municipal representatives did participate in the conference calls' discussions. **Exhibit 1-42(a)** details a list of public officials invited to participate in the conference calls.

Face-to-face visits between company personnel and local officials

Face-to-face visits with communities that had large numbers of customers were implemented on Sunday, December 14. By this time in the restoration process, National Grid had mostly completed a damage assessment of the impacted areas. Representatives from both the ESS department and Division met with police and fire chiefs at the Town of Salem Emergency Operations Center. An update of the Company's restoration activities and priorities was presented to the officials.

Proactive outreach to communities on daily basis

Throughout the restoration process, the Municipal Room made daily calls reminding communities of the following:

- The municipal lines were still open
- If specific issues or questions exist, the Municipal Room would like to know of them
- The customer interruptions and estimated restoration times were updated

Follow up meeting with police and fire officials

On Friday, January 9, 2009, a follow up meeting with New Hampshire police and fire officials was conducted at National Grid's Salem Service Center. During the meeting, the effectiveness of the conference calls in disseminating information was discussed. The outcome of the meeting was to continue the conference calls and conduct critique meetings after a significant storm event. The critiques would allow local officials and the Company the opportunity to identify best management practices and areas for improvement. National Grid agreed to host such meetings, as needed.

Prepared by or under the supervision of: David Gendall

Staff 1-43

Request:

Please describe how "downed wire" notifications originating from emergency officials (fire/police/public work departments) are assigned as restoration priorities.

Response:

On December 11, the Wire Down group for the Merrimack Valley and the Southern New Hampshire communities of the New England – North Division, which is managed by Customer Meter Services from the North Andover (Massachusetts) Service Center, reviewed the existing procedures and staffing as part of storm preparation activities. During normal operations, wire down notifications are managed by Control and Dispatch located in Westborough, Massachusetts.

However, these notifications were decentralized during the December 2008 ice storm's restoration effort and the contact numbers reassigned (internal to the Company's telephone system) to a local authority. This authority's proximity to the damage and additional staffing made it better suited to address the extensive damage.

For the four communities located in southern New Hampshire - Derry, Pelham, Salem, and Windham, these calls were forwarded to the Wire Down group in North Andover. This group received the call information, assigned field personnel to respond, and coordinated their management in response to both damage assessment results and local municipal needs.

New Hampshire municipal officials had two lines of communication available to report a wire down issue:

- Call the wire down number directly, or
- Call the Municipal Room directly

The ESS representative answering the call reported the condition to the Division Communications Coordinator who followed-up with the "wire down" team to ensure that the request was prioritized.

Prepared by or under the supervision of: David Gendall

Staff 1-44

Request:

Please describe how "downed wire" notifications originating from customers are assigned as restoration priorities, if different from above.

Response:

For the December 2008 ice storm, Wire Down support was implemented because of the significant and extensive damage. The Wire Down Coordinator, using PowerOn Orders ("PORD"), a sub-application of National Grid's Outage Management System, assigned the wire down call with the following tiered priorities:

- Police/Fire/Emergency personnel
- No Power calls with Wire Down
- In Service (customer has power) calls with Wire Down

When a Wire Down Appraiser/Stand-by arrived on scene, they assessed (or appraised) the wire down to determine whether it was electrical and then if electrical, determined whether it is primary, secondary, or service wire. Primary wire down calls got a higher priority when assigning the call to a line crew for repair, followed by a secondary, and then a service wire.

Prepared by or under the supervision of: Kurt Demmer

Staff 1-45

Request:

Please detail the number of employee safety incidents incurred during restoration with breakdown by in-house, contracting, affiliate or mutual aid companies. Note any incidents that involve electric facilities.

Response:

Only one safety incident, involving a National Grid employee, was reported for the duration of the restoration effort in New Hampshire.

Incident Date/Time:	Friday, December 12, 2008 at 7:30 p.m.
Date Manager Notified:	Friday, December 12, 2008
Reported By:	Richard Sieger
# of People Injured:	1
# of Fatality:	0
Incident Location:	Plantain Town Road, Mount Washington, MA
Responsible Dept:	Operations – Trouble-man (Great Barrington)
What Happened:	STORM RELATED - Employee was working on restoring power for New Hampshire circuit as part of the storm restoration, when a tree limb fell from approximately 30 feet, striking him on his left shoulder.

Prepared by or under the supervision of: John Weagraff

Staff 1-46

Request:

Please detail the number of vehicular incidents incurred during restoration with break-downs by in-house, contracting, affiliate or mutual aid company employees.

Response:

Only one vehicle incident, involving a National Grid employee and vehicle, was reported for the duration of the restoration effort in New Hampshire.

Incident Date/Time:	Wednesday, December 17, 2008 at 8:00 p.m.
Date Manager Notified:	Wednesday, December 17, 2008
Reported By:	James Burns
# of People Injured:	0
# of Fatality:	0
Incident Location:	Rockingham Mall, Salem, NH
Responsible Dept:	Operations – Overhead Line (North Shore)
What Happened:	STORM RELATED - Employee was leaving the Rockingham Mall and did not see the vehicle on the passenger side rear of his vehicle which was in his blind spot. Employee went to corner and caught the vehicle side mirror and the front fender of the other vehicle. No damage was reported for Company Vehicle ID No. 9835 and no injuries were reported at the time of the accident.

Prepared by or under the supervision of: John Weagraff

Staff 1-47

Request:

For those companies that have affiliates in neighboring states that experienced significant outages at the same time, please explain the process used to assign and deploy resources across state lines for handling simultaneous outages? What processes are in place to ensure NH customers are receiving maximum resources, including crews, management focus, customer relations, and public relations support.

Response:

When an event is imminent, resources are pre-staged to specific locations/regions based on the path and severity of the forecasted storm track, as well as the anticipated ability to move resources based on road conditions. The decision to pre-stage resources is made by the Incident Commander who retains a system-wide perspective of the restoration effort.

For example and during the December 2008 ice storm, additional contractor line crews were pre-staged in Lebanon on December 11 in anticipation of the event.

National Grid follows a process to acquire resources as detailed in the response to Staff 1-20. Allocating those resources is primarily based on the damage assessment and the resulting estimated restoration time. Knowing the type and extent of the damage, an estimate may be proposed for the number of resources needed to restore customers within a prescribed time frame. The ERT process is not an exact "science" and may be adjusted throughout the restoration effort. There are many factors that are included in resource allocation decisions of which availability and travel times are the most highly weighted.

Once the Phase 1 damage assessment results were compiled on Dec 13, New England – North Division requested additional resources for New Hampshire. The Incident Commander in the New England EOC and via Construction Delivery shifted two internal line crews from Massachusetts, an additional two line contractor crews and 18 tree crews. The early emphasis on tree crews reflected the inability to access damage due to blocked roads. On Sunday, December 14, the Incident Commander shifted more line resources into New Hampshire after the tree crews had restored access.

Regardless, consistent communication is established and maintained (by necessity) as part of the restoration effort, which provides key decision makers with real-time field conditions and current progress of restoration activities. This communication is detailed within the frequent storm conference calls that are managed from the centralized oversight of the Incident Commander – Storm in the New England Emergency Operations Center. These calls oversee the alignment of the concerns across the New England states and highlight the following tasks:

- Public and employee safety concerns
- Resources requests and special needs
- Trouble conditions and types
- Damage assessment summaries and ETRs

Additionally, each Company region (Long Island, New England, and upstate New York) and each state (Massachusetts, New Hampshire, New York, and Rhode Island) has a Storm Management Team dedicated to overseeing the restoration effort. With respect to National Grid and the December 2008 ice storm, New Hampshire was the first state to complete its restoration effort, although it had the highest percent of its base customers interrupted (65%). This demonstrates the Company's concern for appropriate resource allocation as it relates to the damage assessment and estimated restoration times.

Prepared by or under the supervision of: Richard Francazio

Staff 1-48

Request:

Please identify post-storm activities completed and those still to be completed, with a schedule for completion times (*e.g.*, for ramp down, internal critiques of lessons learned, industry-shared results of lessons learned, debris removal, cleanup efforts, post-event related tree trimming, replacement of any temporary repairs put in place to expedite restoration).

Response:

National Grid conducted three storm critiques that included New Hampshire and addressed the December 2008 ice storm. Representatives who participated in the storm critiques are presented below.

- New England – North
- Energy Solution Services (New England)
- Transmission Control (New England)
- Construction Delivery
- Corporate Affairs (Media Relations and Internal Communications)
- Customer Contact Center (New England)
- Dispatch & Control
- Emergency Planning
- Supply Chain Management (Logistics Group)
- Protection & Telecom Operations Group
- Process & Systems
- Customer Meter Services
- Gas Dispatch

Each of the storm critiques identified improvement opportunities, which require further investigation and evaluation.

In early January 2009 and following the completion of the restoration effort, Inspections - New England, the group responsible for conducting periodic reviews of the System's Distribution infrastructure, commenced a sweep of all distribution feeders in New Hampshire affected by the December 2008 ice storm. The group uses a software application to note and track items of concern that need to be reviewed for possible repair, replacement, or improvement. New England – North Division is responsible for providing oversight to these sweeps.

Construction Delivery then uses the identified items and creates work packages to address the noted concerns. Construction Delivery has also assigned an internal project lead for these resources who coordinates the work via weekly conference calls with Division personnel.

Approximately three contractor line crews have been working from the Salem Service Center since January 2009. These crews utilize the report results generated by Inspections – New England. Once the items are closed, any changes are noted in the Company's graphic information system to retain the system's accuracy for future work and/or events.

As of February 23, 2009, Inspections – New England has completed reviews and repairs of 21 feeders that were affected by the December 2008 ice storm in the New Hampshire. Thus far, 12 of the 21 feeders are serviced from the Lebanon platform. Eight feeder reviews and repairs have been completed, while the remaining four feeders are scheduled for completion no later than the end of March 2009. Also, 11 of the 21 feeders are serviced from the Salem platform. Although none of the reviews and repairs have been completed on these feeders, all are scheduled for completion by the end of March 2009.

Prepared by or under the supervision of: Aldo Barresi and Thomas Murphy

Staff 1-49

Request:

Please provide comparisons of how the December 2008 ice storm compared to the second and third worst outages in your company's history. Include the event name, date, peak number of crews, restoration costs and any breakdowns of those costs, duration of restoration by hours, quantity of customers interrupted, quantity of company customers at the time, percent of customers interrupted, and number of communities affected. This question assumes the December 2008 ice storm is the worst recorded outage experienced. For purposes of determining worst outages assume the deciding factor is the length of time required to restore all customers.

Response:

Table 1-49 details the worst outages for New Hampshire based upon the length of time required to restore all customers with the modifiers of line crews assigned and storm cost total used.

Table 1-49

National Grid – New Hampshire Past Storm Event Summaries								
Storm Start	**Storm End**	**Storm Type**	**Total CI**	**Total CMI**	**Number of events**	**Line Crews (Peak)**	**Material Cost (Capital)**	**Storm Cost Total**
01/15/07	01/16/07	Ice	26,246	4,473,724	55	29	$1,686	$412,675
04/15/07	04/19/07	Nor'easter	24,260	17,952,422	248	39	$3,272	$837,647
12/11/08 *	12/18/08	Ice	47,642	94,390,906	617	56.5	$229,868	$2,820,000

* Values dated 02/23/09 are preliminary and continue to be totaled.

Notes:

1. **CI** means customers interrupted (cumulative).

2. **CMI** means customer minutes interrupted (total). When divided by 60, the hours interrupted are calculated.

3. Storm costs are reported in unadjusted dollars.

Prepared by or under the supervision of: Thomas Murphy

Staff 1-50

Request:

Please provide any studies the company has undertaken that consider advantages, disadvantages and costs of burying overhead lines with those for underground facilities. Include only those facilities for voltages less than 34.5 kV.

Response:

Distribution Engineering, the group responsible for evaluating such projects, is not aware of any Company studies regarding the cost benefits associated with coupling overhead lines with underground facilities in New Hampshire.

Prepared by or under the supervision of: Robert Sheridan

List of Exhibits

No.	Title
1-1	New England – Electric Emergency Procedures
1-3	Change Request Form
1-5	WSI – National Grid Contracted Services
1-7	WSI – Weather Forecasts and Alerts
1-9(a)	New England – Three Day Checklist
1-9(b)	National Grid – System-wide Storm Conference Call Checklist
1-12	Foreign Crew Storm Pamphlet
1-32(a)	Distribution Vegetation Management Strategies
1-32(b)	Distribution (Vegetation) Maintenance Schedule – New England
1-32(c)	Distribution Line Clearance Specification
1-42(a)	Municipal Room – List of Municipal Officials Invited to Conference Calls